Early Journal Content on JSTOR, Free to Anyone in the World

This article is one of nearly 500,000 scholarly works digitized and made freely available to everyone in the world by JSTOR.

Known as the Early Journal Content, this set of works include research articles, news, letters, and other writings published in more than 200 of the oldest leading academic journals. The works date from the mid-seventeenth to the early twentieth centuries.

We encourage people to read and share the Early Journal Content openly and to tell others that this resource exists. People may post this content online or redistribute in any way for non-commercial purposes.

Read more about Early Journal Content at http://about.jstor.org/participate-jstor/individuals/early-journal-content.

JSTOR is a digital library of academic journals, books, and primary source objects. JSTOR helps people discover, use, and build upon a wide range of content through a powerful research and teaching platform, and preserves this content for future generations. JSTOR is part of ITHAKA, a not-for-profit organization that also includes Ithaka S+R and Portico. For more information about JSTOR, please contact support@jstor.org.

PROBLEMS.

296. (*Selected*) *By L. G. Barbour, Richmond, Ky.*—Given

$$x^6+y^6=\tfrac{1}{2}\sqrt{2},\qquad x^4+y^4=1;$$

to find x and y by quadratics.

297. *By Dr. H. Eggers, Milwaukee, Wis.* — Given three circles and their centers; to find the points of contact with any fourth circle with the ruler alone.

298. *By T. P. Stowell, Rochester, N. Y.*—On the diameter AB produced, of a given circle, is a given point P. A chord CD is parallel to the diameter AB. Find the position of CD, by a geometrical construction, such that the angle CPD shall be the greatest possible.

299. *By E. P. Thompson, Elizabeth, New Jersey* —Prove that the number of terms in an *expanded* polynomial of t terms is equal to the number of combinations of $(n+t-1)$ quantities taken $t-1$ at a time, where n is the exponent of the polynomial.

300. *By Marcus Baker, U. S. Coast Survey, Wash., D. C.*—In a plane triangle ABC are given, the perimeter $2s$ and the radii of the inscribed and circumscribed circles, r and R, to determine the triangle.

301. Determine the angles of a plane triangle from the following relations

$$\text{(I)}\begin{cases}\tan^2 A+\tan^2 B+\tan^2 C=m, & (1)\\ \tan^4 A+\tan^4 B+\tan^4 C=n. & (2)\end{cases}$$

$$\text{(II)}\begin{cases}\tan^2\tfrac{1}{2}A+\tan^2\tfrac{1}{2}B+\tan^2\tfrac{1}{2}C=m, & (1)\\ \tan^4\tfrac{1}{2}A+\tan^4\tfrac{1}{2}B+\tan^4\tfrac{1}{2}C=n. & (2)\end{cases}$$

$$\text{(III)}\begin{cases}\tan\tfrac{1}{2}A+\tan\tfrac{1}{2}B+\tan\tfrac{1}{2}C=m, & (1)\\ \tan\tfrac{1}{2}A\times\tan\tfrac{1}{2}B\times\tan\tfrac{1}{2}C=n. & (2)\end{cases}$$

302. *By Alex. S. Christie, U. S. Coast Survey, Wash., D. C.*—Given n points in space, to construct a polygon of n sides, having its sides bisected by the n given points, and determine the number of solutions.

303. *By Benjamin Headley, Dillsborough, Ind.*—Required the length of one branch of a curtate cycloid; the generating circle having a radius of 4 inches and the generating point a radius of 8 inches.

304. *By Prof W. W. Beman, Ann Arbor, Mich.*—Find the limit of error in the following method of trisecting an arc approximately: Trisect the chord of the arc, also the diameter parallel to it, and the correspondiag semicircumference. Join the corresponding points of trisection of the semicircumference and the diameter, producing the lines till they intersect. From the point thus found pass lines through the points of trisection of the chord until they meet the arc.

305. *By Prof. J. Scheffer.*—Find the eq. of the curve, rect. co-ord. (x,y), in which the length $s = \frac{ny}{x} = \int_0^x dx \sqrt{\left[1 + \left(\frac{dy}{dx}\right)^2\right]}$, n being a constant.

306. *By Prf. W. W. Johnson.*—If N is an odd number and m the number of odd numbers less than N and prime to it (including 1), then N is a divisor of one of the two numbers $2^m \pm 1$.

307. *By Prof. E. B. Seitz, Kirksville, Mo.*—Three points are taken at random in the surface of the northern hemisphere; find the chance that the small circle through the points lies wholly north of the equator, supposing the earth a perfect sphere.

308. *By Chas. H. Kummell, Assist. U. S. Lake Survey.*—Evaluate

$$\int_0^{\frac{a}{2}} dx \sin\left[x(a-x)\right] \text{ and } \int_0^{\frac{a}{2}} dx \cos\left[x(a-x)\right]$$

by rapidly converging series.

PUBLICATIONS RECEIVED.

The Cosmogony of Laplace (pamphlet). By Daniel Kirkwood, LL. D. (Read before the American Philosophical Society, Sept. 19th, 1879.)

Micrometrical Measurement of 1054 *Double Stars, Observed with the* 11 *inch Refractor from Jan.* 1, 1878 *to September* 1, 1879, *Under the Superintendence of* Ormond Stone, A. M., *Director.* 180 pp., 8vo. Cincinnati. 1879.

The National Quarterly Review, Edited by David A. Gorton, M. D. and Cha's H. Woodman. New York. January, 1849.

The Jan. No. of this very able *Review* contains, among other valuable articles, an article by Dr. Gorton, the senior editor, on "The Hygiene of Water" which is especially interesting, and a historical and critical review of the Nebular Hypothesis, by Prof. David Trowbridge, in which an effort is made to reconcile the hypothesis with the anomaly presented by the inner satellite of Mars.

ERRATA.

On page 31, line 9, for "inverse order of rotation", read same order of rotation.
" " 52, last linere, for "mystic", read mistic.